

A NEW SONORELLA FROM PHOENIX, ARIZONA

BY WENDELL O. GREGG AND WALTER B. MILLER

In 1953 Allyn G. Smith collected shells of a small *Eremarionta*-like snail in the rocky hills just north of the Arizona Biltmore Hotel in Phoenix. Additional collections were made on 28 Jan., 1954 by Munroe L. Walton and again on 23 April, 1954 by the senior author and M. L. Walton. On 30 Oct., 1965, M. L. Walton, Joseph C. Bequaert, and the junior author collected large quantities of dead shells as well as live specimens in the same vicinity; dissection of several specimens revealed them to be a new species of *Sonorella*, described below:

SONORELLA ALLYNSMITHI new species.

Fig. 2, A-C.

Description: Shell depressed-globose, heliciform, small, moderately thin, glossy, white with a tinge of brownish-grey, with a light-brown spiral band on the well-rounded shoulder; umbilicate, the umbilicus contained about $6\frac{1}{2}$ times in the diameter. Embryonic shell of about $1\frac{1}{2}$ whorls, with a very small, silky-smooth area at the apex, followed by closely-spaced radial wrinkles over which are the faint remnants of superimposed spiral, hyphen-like papillae which occasionally anastomose into forwardly descending and ascending threads. Post-embryonic whorls with irregular, light growth wrinkles, the first part with occasional pit scars of worn-off periostracal projections; periostracum silky-lustrous. The last whorl descends steeply and abruptly to the moderately expanded peristome. Aperture oblique, rounded, wider than high, with margins converging; parietal callus thin.

Holotype measurements: Height 7.8 mm.; max. diam. 13.4 mm.; umbilicus 2.1 mm.; whorls $4\frac{1}{8}$.

The body wall of the animal is very dark grey, nearly black. The mucus gland papillae of the mantle collar are brownish-white and occasionally exude vivid orange secretions, particularly in the vicinity of the pneumostome. The sole is dark grey as is the tail of the foot.

Genitalia of holotype (fig. 2, A): The small penis is enveloped in a thick, muscular sheath in the manner of *S. rooseveltiana rooseveltiana* and *S. rooseveltiana fragilis*. It contains at its apical end a minuscule verge. The epiphallus is about twice as long as the penis and bears a prominent, detached epiphallic caecum. The

penial retractor is inserted well up on the epiphallus, about half-way between the penis and the epiphallic caecum. Vagina short, about $\frac{1}{2}$ the length of the penis; the free oviduct is relatively long, being nearly twice as long as the vagina.

Measurements of Genitalia, in mm.	Holotype	Paratype 4833-A	Paratype 5042-A
Penis	2.4	2.0	3.0
Verge	0.10	0.18	0.16
Penial sheath	2.0	1.2	2.0
Epiphallus	5.0	5.0	5.5
Epiphallic caecum	0.6	0.7	0.6
Vagina	1.3	1.2	1.0
Free oviduct	2.0	2.0	2.0
Spermathecal duct	18.0	16.0	18.0

Type locality: Phoenix Mts., Phoenix, Maricopa Co., Arizona, in igneous rock piles on east side of Squaw Peak road, about 0.3 miles from Lincoln Drive; elev. ca. 1500 ft. (A. G. Smith, M. L. Walton, W. O. Gregg, J. C. Bequaert, W. B. Miller.) Holotype ANSP. (314853). Paratypes in collections of ANSP. (314854), Dept. of Biological Sciences, University of Arizona (1630), M. L. Walton (6807, 6851, 9225), W. O. Gregg (7029), W. B. Miller (4833, 5042), and A. G. Smith (10,974). Additional paratypes to be deposited in collections of Calif. Acad. Sci. and Los Angeles Co. Museum.

This species is one of the smallest sonorellas known. In the large type lots examined, with over 200 adult shells, the largest specimen has a diameter of 15.7 mm. while the smallest measures 12.5 mm. The embryonic spiral threads and post-embryonic periostracal projections are prominent on fresh, immature shells but are largely or entirely worn off on older specimens. The shoulder band varies from chestnut brown to light tan and is occasionally absent on some fresh specimens.

The genitalia show a close relationship to *S. rooseveltiana rooseveltiana* and *S. rooseveltiana fragilis*. In the latter two, the penial sheath is short and muscular as in *allynsmithi*, but the verge is completely absent. The very short vagina and the relatively long free oviduct are unusual in *Sonorella*, the free oviduct normally being shorter than the vagina. The insertion of the penial retractor at a point about midlength on the epiphallus is a *Micrarionta* char-

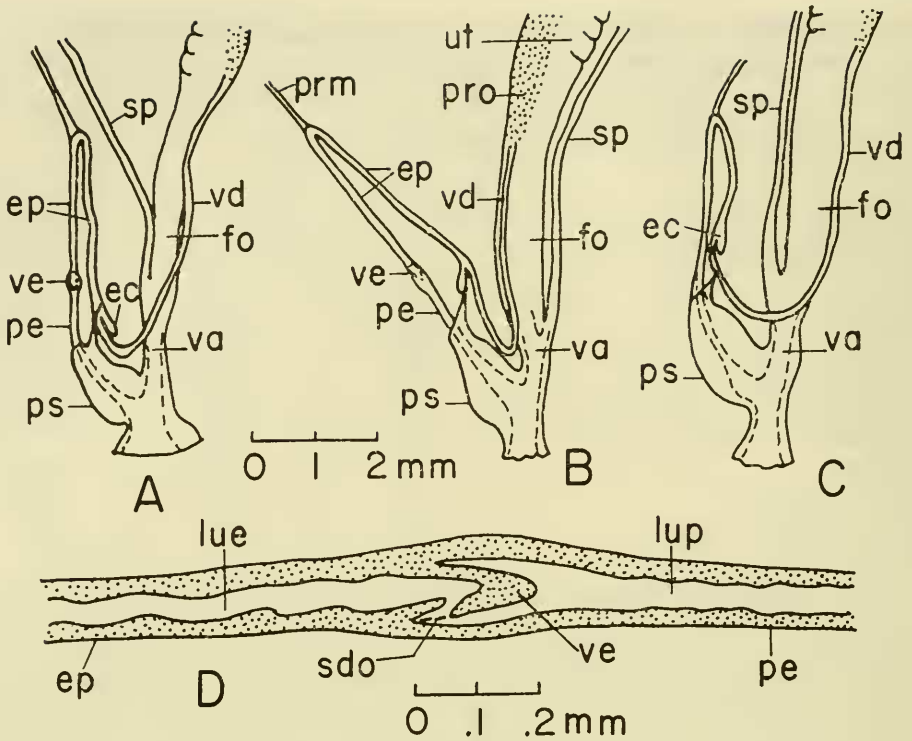


Figure 1. Lower genitalia. A. Holotype, *Sonorella allynsmithi* Gregg & Miller. B. Paratype #5042-A, *S. allynsmithi*. C. *S. rooseveltiana rooseveltiana* Berry, #4935-E, Theodore Roosevelt Dam, Arizona. D. Details of verge of *S. allynsmithi* (from photomicrograph of #5042-A). Upper scale for A-C. Lower scale for D. ec, epiphallic caecum; ep, epiphallus; fo, free oviduct; lue, lumen of epiphallus; lup, lumen of penis; pe, penis; prm, penial retractor muscle; pro, prostate; ps, penial sheath; sdo, seminal duct orifice; sp, spermathecal duct; ut, uterus; va, vagina; vd, vas deferens; ve, verge.

acteristic; the usual insertion in *Sonorella* is on the epiphallus very close to the penis. *S. allynsmithi*, therefore, forms a link between verge-less species of *Sonorella* and those with a verge. Its existence raises doubts on the validity of *Mytophallus* as a good subgenus.

The habitat of *Sonorella allynsmithi* is the most arid, hottest, and lowest of any *Sonorella* known; it is more typical of *Eremarionta* habitats. The small size and light color of the shell, the nearly black body wall of the animal, and the high insertion of the penial retractor on the epiphallus are also *Eremarionta* characteristics. This may be a case of convergent evolution or it may be a close phylogenetic link which would tend to point to *S. allynsmithi* as a relatively unchanged descendant of the ancestral *Sonorella* founder.

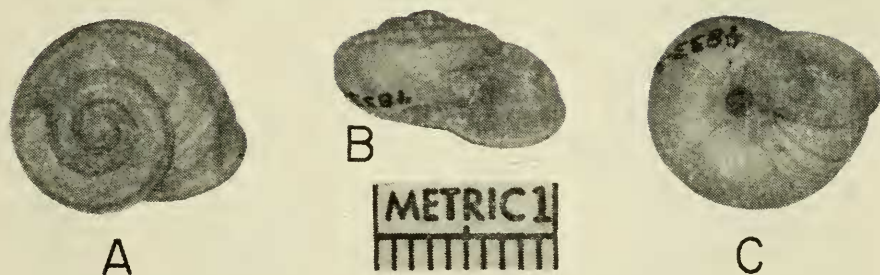


Figure 2. Holotype. A-C, *Sonorella allynsmithi* Gregg & Miller.

It is named after Allyn G. Smith, long time malacologist, friend, and colleague, and current Curator of Invertebrates at the California Academy of Sciences.

HYDROID AND SPONGE COMMENSALS OF *CANTHARUS CANCELLARIUS* WITH A "FALSE SHELL"

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The marine gastropod *Cantharus cancellarius* (Conrad), common in shallow waters of the northeastern Gulf of Mexico (Abbott, 1954), frequently is collected in the Alligator Harbor area of Florida in special symbiotic associations with a hydroid, *Podocoryne carnea* Sars, or with a sponge, *Xestospongia halichondrioides*. This report presents observations on the hydroid and sponge commensals associated with this gastropod, and the occupancy of the latter's sponge-encrusted shell by a hermit crab. The occurrence of a remarkable "false shell," sometimes the product of this commensal relationship, is also recorded.

In the Alligator Harbor area, *Cantharus cancellarius* has been collected from the intertidal zone to a depth of approximately 25 feet. In the collections dredged from sand bottoms 10 to 20 feet deep off Lighthouse Point, Alligator Harbor, and Dog Island on 20 March 1965, 9 October 1965, and other dates, the shells of all live *C. cancellarius* were clothed by a white or pinkish encrustation of the hydroid *Podocoryne carnea*. This hydroid species, which has been recorded from both sides of the Atlantic Ocean (Fraser, 1944), is known primarily from gastropod shells occupied by